

A NOTE ON THE PREVALENCE OF CERATOPOGONINE MIDGES ON THE WINDOWS OF THE ACCRA LABORATORY DURING A COMPLETED YEAR

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With a view to determining the prevailing species of 'sand-flies' in Accra, the collection of small flies from the windows of the laboratory in the evening was begun in October, 1919, and upon finding that they were present in large numbers, was carried on in a systematic manner for twelve consecutive months, namely, from the 1st of December, 1919, to the 30th of November, 1920.

The method of capture of these small insects was that previously described in the first part of our 'Observations on the Ceratopogonine Midges of the Gold Coast' (*Ann. Trop. Med. and Parasitol.*, XIV, p. 189). The windows of the laboratory, which were open all day, were closed each evening at 5 p.m.: shortly afterwards insects began to appear on the insides of the window-panes, and were secured. The period of collection each evening was usually limited to about an hour, 5.30 to 6.30 p.m., owing to the rapid onset of darkness, but occasionally a few specimens were taken later, in bungalows upon walls in the vicinity of a lamp.

A large and varied collection of small insects was obtained in this way. The number of 'sand-flies' taken, that is Ceratopogoninae and *Phlebotomus* spp., was between three and four thousand, and included several new species, the majority of which have already been described. Specimens of *Culicoides*, it may be noted, are easily taken on glass, as they rarely attempt to fly, differing

in this respect from *Phlebotomus* and from the larger species of *Forcipomyia*.

If it be justifiable to draw conclusions from an exceptionally dry year (see Table I), there would appear to be some seasonal variation

TABLE I.
Rainfall and Mean Temperature at Accra during the year.

	Rainfall in inches	Mean temperature
1919		
December ... ..	...	78°98° F.
1920		
January	0°04	80°43
February	0°18	81°34
March	0°74	84°70
April	3°19	84°66
May	2°12	83°33
June	5°07	81°06
July ... ..	...	79°40
August	0°17	78°77
September	0°36	75°58
October	1°36	76°01
November	1°79	79°16

in the prevalence of the species of Ceratopogonine midges encountered upon the windows of the Accra laboratory. *Culicoides* were more plentiful than *Forcipomyia* from the beginning of December to the end of May, while from the beginning of June to the end of November they were very scanty. *Forcipomyia*, on the contrary, were rare when *Culicoides* were abundant, and were present in much larger numbers than *Culicoides* in the collections made from the beginning of June to the end of November.

A table (Table II) is given which shows approximately the seasonal prevalence of the more common midges captured. Only those species are included which occurred with tolerable frequency at some part of the year at any rate. In addition, however, single, or but one or two specimens, were taken of the following species:--

*Thysanognathus** (*Prionognathus*) *maculipennis*, C., I. and M., *T. maculithorax*, C., I. and M., *T. pseudomaculipennis*, C., I. and M., *Dasyhelea flavipicta*, I. and M., *Atrichopogon acosmetum*, I. and M., *A. africanum*, I. and M., *A. chrysospherotum*, I. and M., *A. elektrophaeum*, I. and M., *A. kelainosoma*, I. and M., *A. perfuscum*, I. and M., *A. xanthoaspidium*, C., I. and M., and *Forcipomyia* (*hirsuta*). With regard to the names of species of *Forcipomyia* in the table, it is to be noted that in some cases they are only provisional since they refer to new species, descriptions of which have been written but have not yet been published—such names are indicated by being enclosed in brackets. Species of *Phlebotomus* are not included, since they were all forwarded to Prof. R. Newstead.

From time to time flies of large size were taken whilst searching for 'sand-flies,' but as a rule they were avoided since in their death throes they were apt to damage their more delicate neighbours in the killing tube; for the same reason mosquitoes also were looked upon with disfavour. Although, therefore, no systematic collections of such insects were made, the following facts may be noted. Several specimens of *Auchmeromyia luteola*, F., and *Cordylobia anthropophaga*, Grünb., were taken, and one or two specimens of *Stomoxys nigra*, Macq., but no specimen of *Glossina*—a fact which is not surprising considering the rarity of tsetse-flies in Accra and the lateness of the hour at which the collecting was done. The commonest mosquitoes captured were *Stegomyia fasciata*, F., *Culex fatigans*, Wied., *C. decens*, Theo., and *Ochlerotatus irritans*, and it may be recorded that two specimens of *C. rimia*, Theo., and a single specimen each of *Stegomyia luteocephala*, Newst., and of *Culex* (*Micraedes*) *inconspicuus*, Theo., were also taken. These insects presumably were attempting to escape from the laboratory when they were captured.

* For change of name see *Ante* p. 244.

TABLE II.

The seasonal prevalence of Ceratopogonine Midges on the windows of the Accra Laboratory.

	December, 1919	January, 1920	February	March	April	May	June	July	August	September	October	November
<i>Culicoides accraensis</i> , C. I. & M.	... xx	x	xx	xx	x	x	...	...	...	...	...	...
<i>C. austeni</i> , C. I. & M....	... ..	xx	xx	xx	x	x	x	x	xx	x	x	x
<i>C. citroneus</i> , C. I. & M.	... x	x	x	x	x	...	...	...	...	...	...	x
<i>C. clarkei</i> , C. I. & M.	... x	xx	x	x	x	x	...	...	...	x	...	x
<i>C. distinctipennis</i> , Aust.	... x	xxx	x	xxx	...	...	xx	xx	xx	x	x	x
<i>C. grabami</i> , Aust.	... ..	x	x	x	x	x	...	...	...	...	...	x
<i>C. neavei</i> , Aust.	... ..	...	...	x	x	...	x	...	...	...	...	...
<i>C. pallidipennis</i> , C. I. & M.	... x	x	x	x	x	x	x	...	...	...	...	x
<i>C. schultzei</i> , (End.)	... ..	xx	xxxx	xx	xxxx	xxxx	xxx	xxx	xxx	xx	x	x
<i>C. similis</i> , C. I. & M.	... ..	xx	xx	xxx	xx	...	...	...	...	...	...	x
<i>Tbysanognathus</i> * <i>marmoratus</i> , C. I. & M.	... ..	x	x	x	x	x	...	x	...	...	...	...
<i>Centrobynchus</i> [<i>Lasiobelea</i>] (<i>inconspicuus</i>)	... ..	...	...	x	...	...	...	...	x	...	x	...
<i>Forcipomyia castanea</i> , Walk.	... x	x	x	x	x	xxx	xxx	xxx	xxx	xxx	xx	xx
<i>F. incomptifeminibus</i> , Aust.	... ..	...	...	x	...	...	x	...	...	...	x	x
<i>F. ingrami</i> , Cart.	... ..	xx	xxxxx	xxx	xxxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx
<i>F. inornatipennis</i> , †Aust.	... ..	...	...	...	x	x	x	x	x	x	x	xx
<i>F. (biannulata)</i>	... ..	x	...	...	...	x	x	x	x	x	x	xx
<i>F. (squamipennis)</i>	... ..	x	x	x	xx	x	xx	xxx	xx	x	x	xx

x = under ten specimens taken ; xx = over ten but under twenty, etc.

* For change of name see *Ante* p. 244.

† This name possibly includes two species.